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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/671,718

09/29/2003

Yuichi Ogawa

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ALEXANDRIA, VA 22314

EXAMINER

KIM, PAUL

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/671,718	<b>Applicant(s)</b> OGAWA ET AL.	
	<b>Examiner</b> PAUL KIM	<b>Art Unit</b> 2161	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 February 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,4,6,7,9,10,12-16,18 and 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-4, 6-7, 9-10, 12-16, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This Office action is responsive to the following communication: Amendment filed on 1 February 2008.
2. Claims 1, 3-4, 6-7, 9-10, 12-16, 18 and 19 are pending and present for examination.

### ***Response to Amendment***

3. Claims 1, 3, 6, 7, 9, 10, 16, and 18-19 have been amended.
4. No claims have been added.
5. No claims have been cancelled.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1, 3-4, 6-7, 9-10, 16, and 18-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Numata (U.S. Patent No. 5,943,669, hereinafter referred to as NUMATA), filed on 21 November 1997, and issued on 24 August 1999, in view of Mohan et al (U.S. Patent No. 6,970,881, hereinafter referred to as MOHAN), filed on 1 March 2002, claiming provisional priority to 7 May 2001, and issued on 29 November 2005, in further view of Yadav et al (USPGPUB no. 2004/0186828, hereinafter referred to as YADAV), filed on 23 December 2003, claiming provisional priority to 24 December 2002, and published on 23 September 2004.
8. **As per independent claims 1, 3, 6, 7, 10, 16, and 18**, NUMATA, in combination with MOHAN and YADAV, discloses:

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A document search method for finding a document relevant to a search condition from object documents as search objects, comprising the steps of:

acquiring a seed text which is inputted as the search condition {See NUMATA, C33:L11-16, wherein this reads over "a query is first input by means of query input section 28"};

partitioning the object document into a plurality of blocks {See NUMATA, C5:L42-59, wherein this reads over "[f]undamental vector generation section 4 partitions the logical structure of the documents that were analyzed in logical structure analysis section 4 by means of the classification units that were designated by classification unit designation section 2"};

calculating similarity of each block of the object document to the seed text {See NUMATA, C33:L22-27, wherein this reads over "the comparison of the query vector and the composite vectors is performed"};

judging whether or not the calculated similarity of each block satisfies a predetermined condition;

calculating a similarity of the object document as a whole to the seed text, based on the calculated similarity of each block to the seed text {See NUMATA, C2:L56-66, wherein this reads over "the degree of similarity between the query and chapter headings, as well as the degree of similarity between the query and paragraphs, are calculated respectively"};

calculating, as an inclusion degree for each object document, a ratio of the number of blocks that are judged as satisfying said predetermined condition to the total number of the plurality of blocks {See MOHAN, C16:L22-29, wherein this reads over "Concept presence ratio ( $R_c$ ): This is the ratio of number of times a concept occurs in an object ( $n_c$ ) over the total of all the concepts that occur in an object ( $n_w$ )"} resulting from the partitioning of the object document {See YADAV, [0050], wherein this reads over "a document's score is a function of: (a) whether or not a query term is found in the document's title; (b) whether or not a query is found in a figure legend of the document; (c) the frequency with which each query term is found in the document's abstract; (d) the frequency with which each query term is found in the document's main body"}; and

outputting for display a list of object documents showing each object document in association with the calculated inclusion degree therefore, and in association with the similarity of each listed object document as a whole to the seed text {See NUMATA, C33:L17-27, wherein this reads over "the comparison of the query vector and the composite vectors is performed (step S44 of FIG. 17) and is displayed on display section 31 along with the structural elements of the corresponding retrieval units in descending order of the degree of similarity between the composite vectors and the query vector"}.

While NUMATA may fail to expressly disclose the calculation of an inclusion degree for each object document, the combination of MOHAN and YADAV would disclose an invention wherein the frequency of each query term, or concept, in a section of the document such as the abstract or main body (i.e. the number of blocks that are judged as satisfying a predetermined condition) may be used in the calculation of a ratio wherein said frequency of query term, or concept, would be compared to the total number of concepts, or terms, in the object (i.e. the total number of the plurality of blocks in the partitioned object

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document). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above invention suggested by NUMATA by combining it with the invention as disclosed by MOHAN and YADAV.

One of ordinary skill in the art would have been motivated to do this modification so that the calculated inclusion degree may be used in determining the relative similarity of the seed text to the object document.

9. **As per dependent claims 2, 5, 8, 11, 17, and 20**, the Examiner notes that the method step of "outputting the inclusion degree and the similarity" would be inherent to the claimed invention in that when a calculation is made, a result is necessarily outputted. Additionally, wherein the calculations for the similarity and the inclusion degree both take into account the object document, it is inherent that the similarity and the inclusion degree will be associated with each other.

10. **As per dependent claim 4, 9, and 19**, NUMATA, in combination with MOHAN and YADAV, discloses:

The document search device according to claim 3, further comprising:

- a full-text search condition acquisition module which acquires a full-text search condition to be used for a full-text search of the object documents {See NUMATA, C33:L11-16, wherein this reads over "a query is first input by means of query input section 28"};
- a full-text search condition analysis module which analyzes the acquired full-text search condition {See NUMATA, C17:L20-28, wherein this reads over "a query vector generation section"}; and
- a full-text search condition relevancy calculation module which, on the analyzed full-text search condition, calculates, as a full-text search condition relevancy, a ratio of a number of relevant min terms satisfied by characteristic strings of said each block to a number of total min terms included in the full-text search condition {See NUMATA, C33:L22-27, wherein this reads over "the comparison of the query vector and the composite vectors is performed"}, wherein:

the inclusion degree calculation module judges whether or not the calculated similarity satisfies the first predetermined condition and whether or not the calculated full-text search condition relevancy satisfies a second predetermined condition, and calculates, as the inclusion degree, a ratio of the number of blocks {See MOHAN, C16:L22-29, wherein this reads over "Concept presence ratio ( $R_c$ ): This is the ratio of number of times a concept occurs in an object ( $n_c$ ) over the total of all the concepts that occur in an object ( $n_{tc}$ )"} that are judged to satisfy the first and second predetermined conditions to the total number of the plurality

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of blocks of the object document {See YADAV, [0050], wherein this reads over "a document's score is a function of: (a) whether or not a query term is found in the document's title; (b) whether or not a query is found in a figure legend of the document; (c) the frequency with which each query term is found in the document's abstract; (d) the frequency with which each query term is found in the document's main body"}.

11. **Claims 12-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over NUMATA, in view of MOHAN and YADAV, and further in view of Caudill et al (U.S. Patent No. 6,766,316, hereinafter referred to as CAUDILL), filed on 18 January 2001, published on 12 September 2002, and issued on 20 July 2004.

12. **As per dependent claim 12**, NUMATA, in combination with MOHAN, YADAV, CAUDILL, discloses:

The document search method according to claim 1, further comprising the steps of:

extracting character strings from the acquired seed text {See CAUDILL, C10:L53-56, wherein this reads over "an input query 118 is sent to the ontological parser 122. Fourth, the ontological parser 122 parses the input query 118 and generates one or more predicate structures"}; and

extracting character strings from the block of the object document {See CAUDILL, C10:L40-44, wherein this reads over "the ontological parser 122 parses each document 120 and generates one or more predicate structures for each sentence in the document"}, wherein:

the similarity of each block of the object document to the seed text is calculated by comparing the character strings extracted from each block with the character strings extracted from the seed text {See CAUDILL, C10:L59-64, wherein this reads over "a query predicate library (representing an input query 118) and a set of document predicate libraries (representing a set of documents 120) are sent to the relevancy ranking component 128 to compare the similarity level between an input query 118 and the document 120"}.

While NUMATA may fail to expressly disclose the extraction of character strings, CAUDILL discloses the generation of predict structures which require the extraction of character strings. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above invention suggested by NUMATA by combining it with the invention as disclosed by CAUDILL.

One of ordinary skill in the art would have been motivated to do this modification in order to extract character strings for use in the calculation of similarity between blocks of an object document and a query.

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13. **As per dependent claim 13**, NUMATA, in combination with MOHAN, YADAV, CAUDILL, discloses:

The document search method according to claim 12, further comprising the steps of:

regarding each block as a relevant block to the seed text in response to the calculated similarity of the block being higher than a preset value {See CAUDILL, C13:L11-17, wherein this reads over "the predicate structure matching component determines a matching degree between two predicate structures" and "[i]f they match exactly, the result is returned to the user"};

counting the number of blocks judged as the relevant blocks {See Figures 8 and 13-16}; and

storing the counted number of relevant blocks {See CAUDILL, C23:L23-38}.

14. **As per dependent claim 14**, NUMATA, in combination with MOHAN, YADAV, CAUDILL, discloses:

The document search method according to claim 13, wherein the total number of blocks included in the object document is calculated, and the inclusion degree is calculated from a ratio of the calculated total number of blocks to the stored counted number of relevant blocks {See CAUDILL, C10:L14-17, wherein this reads over "[t]he relevance of a document to a user's query is determined by calculating the similarity coefficient, based on the structures of each pair of query predicates and document predicates"}.

15. **As per dependent claim 15**, NUMATA, in combination with MOHAN, YADAV, CAUDILL, discloses:

The document search device according to claim 4, further comprising a characteristic string extraction module which extracts characteristic strings from the seed text, wherein:

the characteristic string extraction module extracts characteristic strings also from each block of the object document {See CAUDILL, C7:L30-45, wherein this reads over "[t]he document vectorization unit 130 converts the set of predicate structures derived from ontologically parsing a document into one or more large-dimensional numerical vectors"},

the similarity calculation module calculates the similarity of each block by comparing the characteristic strings extracted from the block with the characteristic strings extracted from the seed text {See CAUDILL, C10:L59-64, wherein this reads over "a query predicate library (representing an input query 118) and a set of document predicate libraries (representing a set of documents 120) are sent to the relevancy ranking component 128 to compare the similarity level between an input query 118 and the document 120"}, and

the inclusion degree calculation module

regards each block as a relevant block in response to the similarity of the block being higher than a preset value and the full-text search condition relevancy of the block being higher than a preset value {See CAUDILL, C13:L11-17, wherein this reads over "the predicate structure matching component determines a matching degree

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between two predicate structures" and "[i]f they match exactly, the result is returned to the user"},

counts the number of the relevant blocks included in the object document {See Figures 8 and 13-16}, and

calculates the inclusion degree of the object document by use of the counted number of relevant blocks and the total number of blocks included in the object document {See CAUDILL, C23:L23-38}.

### ***Response to Arguments***

16. Applicant's arguments with respect to claims 1, 3-4, 6-7, 9-10, 12-16, and 18-19 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL KIM whose telephone number is (571)272-2737. The examiner can normally be reached on M-F, 9am - 5pm.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Apu Mofiz can be reached on (571) 272-4080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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